

# A.A.A.S. BULLETIN

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## Forty Years of Public Health

Within a generation science has opened broad avenues to learning and provided abundant leisure for traveling them. In explicit terms, these avenues have been the public schools, colleges, universities, libraries, the daily press, serial publications, the radio, motion pictures and cultural organizations. But the acquisition of information is not the primary interest of mankind, as is proved by the fact that such a subject is rarely mentioned when two persons meet. Instead, inane comments on the weather serve as openings for discussing their health. Health is perhaps the foremost subject of general interest to human beings.

In the past 40 years science has made as revolutionary improvements in health as in means of education and recreation. The brilliance of these achievements has been dimmed by the rush of distractions—automobiles, radios, motion pictures, labor saving machinery, luxuries, wars. Consider diphtheria, for example. As recently as 1900 it was a common occurrence for this dread agent of Death suddenly to invade a home and strike down its most precious treasures. Now it is almost a memory. Specifically, the death rate from diphtheria was 37 times higher in 1900 than it is today. No more striking illustration can be given than that the number of American boys who have died this year on European battle fields (to September 1) is smaller than the number of American children who died from diphtheria in the year 1900, when the population of the country was only 76,000,000.

The battle against disease has continued not for a few weeks but for years and has been won

on many fronts. The infectious diseases, particularly of childhood, have been largely controlled. Numerically, the death rate from typhoid and paratyphoid fever was about 30 times higher in 1900 than in 1943. It was 20 times higher for scarlet fever, six times higher for whooping cough, more than four times higher for tuberculosis, six times higher for dysentery and malaria, three times higher for pneumonia and influenza, and 15 times higher for diarrhea. If it had not been for the advances in sanitary science and medical science that have been made, these nine diseases alone would have taken ten times more American lives during the past forty years than have been lost by our armies on all the battle fields on which our young men have fallen during the entire history of the United States. And the advances in medical science that are being made during this war, primarily because of the urgent problems it is presenting, will almost certainly save more American lives during the next ten years than this country will have lost on all our European and Pacific battle fields.

Death rates in the United States during the past 40 years implicitly tell the same story of improvement in public health. In 1900 the number of deaths per thousand of the entire population in states in which adequate records were kept was 17.2. By 1941 it had declined by 40 percent to 10.5. That the improvement has been largely due to protection of the young is shown by the fact that the percentage of the deaths of children under five years of age decreased from more than 30 percent of all deaths to less than ten between 1900 and 1941. In these 40 years the average length of life of the inhabitants of the United States increased by more than 25 percent. Lest it be concluded that this amazing record is due to something peculiarly American it should be recorded that generally similar changes have taken place throughout the world wherever there have been corresponding advances in sanitary and medical science.

Not much farther back than the beginning of this century one could find sewage running in street gutters of some of our large cities. Such

menaces to health have been removed from every city and town in this country, and uncontaminated water has been made available to all urban populations. The enormous costs of these great contributions to public health could not have been borne if the applications of science in technology had not provided new engineering methods and fabulous financial resources to put them into effect. Untold billions of dollars have been required for these sanitary systems, and scores of millions for medical laboratories, libraries, and hospitals. Without them medical science could not have made its discoveries so largely effective as they have been. At present 717 hospitals in the United States are on the approved list of the American Medical Association for training interns, and a larger number for various specialties, with a total of over 6,000 hospitals. There are 306 medical libraries distributed throughout the country, at least one in every state except five of the sparsely settled Mountain States, in which may be found the records of the progress in medicine throughout the world.

Medical science, in the strict use of the terms, was born in this country in 1893, when the School of Medicine of The Johns Hopkins University opened its doors to students. Previous to that time there were few necessary requisites for the study of medicine, and too often licenses were given to practise after only an apprenticeship in the offices of village doctors. Shortly after the founding of the School of Medicine of The Johns Hopkins University an epidemic of starting medical colleges swept over the country, somewhat similar to that of the founding of denominational colleges in earlier days. In 1905 there were 160 medical schools, attended by 26,147 "students of medicine" from which 5,606 students were graduated. Now there are only 77 schools of medicine on the approved list for full four-year courses in medical science. Immediately preceding the war about 25,600 students attended these 77 schools and about 5,700 of them were awarded medical degrees each year. The present activity in medical science is indicated by the fact that there are in the United States 162 national and interstate medical societies which support 80 journals for the publication of medical literature.

Speed in this modern age is not limited to streamlined railway trains and airplanes riding the winds, both moving so rapidly that never can the eye linger on a lovely landscape. Speed is characteristic of everything today, including the prevention and the curing of disease. The memories of millions of men and women in this country reach back to the early days of aseptic sur-

gery. Millions of them have witnessed the extension of vaccination against a series of infectious diseases besides smallpox. They have seen the rise of antitoxins and synthetic chemical remedies. They have marveled at the advantages of X-ray machines, fluoroscopes and related scientific equipment for the diagnosis and cure of disease. They have antedated the discovery of vitamins and of the products of the endocrine glands. In their brief lives they have read the first announcements of half of the basic medical discoveries that have been made in the long history of mankind.

### Multum ex Parvo

One of the interesting characteristics of science is that often it gets much out of a little. For example, it is now possible, speaking roughly, to get as much usable energy out of a pound of coal as a horse can deliver in an hour. Perhaps the most important consequence of this particular efficiency is that it will greatly increase the long period that coal will remain as a major source of energy. The low cost of the transformation from coal to electricity—less than one cent for a horsepower hour, including the cost of the coal—is hardly less remarkable.

In the transformation of electric energy into light, the increasing efficiency is equally amazing. From 1885 to about 1900 sputtering carbon arcs lighted the principal streets of the larger cities. Edison's development of the carbon filament took electric lights into homes. When Langmuir invented methods of producing tungsten filaments electric lights became three times as efficient as they had been. Then the efficiency was doubled by filling the bulbs with inert gases, making a six-fold increase in efficiency over the yellowish light from carbon filaments which astonished our predecessors a generation ago. Expressed in terms of money, the cost of the light we now use in our homes would be four billion dollars more per year than we are now paying if we had to use carbon lamps. Even this is not the end, for the fluorescent lights in sizes for illuminating room areas are two to three times as efficient as the gas-filled tungsten bulb.

A comparable illustration is afforded by Midgley's discovery that tetraethyl lead greatly improves gasoline for use in high-compression internal combustion engines. In his address of acceptance of the Perkin Medal in 1937 he stated that in the motor cars manufactured in 1936 alone the increased horse power amounted to fifty times that to be obtained from the hydro-

electric development at Boulder Dam in the Colorado River. Boulder Dam greatly serves a limited area in the far Southwest. Tetraethyl lead adds power to engines wherever the wheels of motor vehicles turn or airplanes ride the winds.

### Association Publications

#### Journals

	Prices	
	Members	Others
Science (weekly)	Free	\$6.00
The Scientific Monthly (illustrated)	Free	5.00
A.A.A.S. Bulletin	Free	1.00

#### Symposia

(Technical books, 7½ × 10½, double column, illustrated, cloth bound)

	Prices	
	Members	Others
Tuberculosis and Leprosy. 24 authors; 133 pages. 1938	\$2.50	\$3.00
Recent Advances in Surface Chemistry and Chemical Physics. 9 authors; 133 pages. 1939	2.50	3.00
The Migration and Conservation of Salmon. 9 authors; 106 pages. 1939	2.00	2.50
Mental Health. 94 authors; 478 pages. 1939	3.50	4.50
Problems of Lake Biology. 9 authors; 142 pages. 1939	2.00	2.50
The Gonococcus and Gonococcal Infection. 45 authors; 171 pages. 1939	2.50	3.00
The Genetics of Pathogenic Organisms. 11 authors; 90 pages. 1940	2.00	2.50
Blood, Heart and Circulation. 53 authors; 339 pages. 1940	3.00	4.25
Human Malaria. 42 authors; 406 pages. 1941	4.00	5.00
Liebig and After Liebig—A Century of Progress in Agricultural Chemistry. 9 authors; 119 pages. 1942	2.50	3.00
Aerobiology. 55 authors; 304 pages. 1942	3.50	4.00
Relapsing Fever. 25 authors; 136 pages. 1942	2.50	3.00
Fluorine and Dental Health. 13 authors; 109 pages. 1942	\$2.50	\$3.00
Laboratory Procedures in Studies of Chemical Control of Insects. 53 authors; 214 pages. 1943	3.50	4.00
Surface Chemistry. 15 authors; 167 pages. 1943	2.75	3.25
Symposium on Hormones. 17 authors; about 250 pages; in press		

Mammary Tumors in Mice.

12 authors; about 260 pages; in press

#### Nontechnical Books

(6 × 8½, illustrated, cloth bound)

	Prices	
	Members	Others
Multiple Human Births— Twins and Supertwins. 226 pages. 1940	\$2.00	\$2.50
Strange Malady—The Story of Allergy. 285 pages. 1941	2.50	3.00
Alcohol Explored. 305 pages. 1942	2.25	2.75

#### Summarized Proceedings

(6 × 9½)

Volumes 87-93 for 1934-1939.		
1118 pages. 1940. Cloth bound	\$3.50	\$4.00
Previous volumes	1.00	1.00

#### Note

Special prices are quoted to members as part of their membership privileges because the Association bears all editorial and related costs which members pay indirectly in their dues. Moreover, the prices are for cash orders that require no extra billing or accounting. Hence, an institution or a nonmember may not place an order on a member's account, even with the member's consent.

#### The October Scientific Monthly

In the leading article the Hydrographer of the Navy gives examples of several projections of the globe that might serve as maps of most of the world. He points out that no one map can serve all purposes and gives his reasons for believing the layman would be served best by a combination of three maps: one, a Mercator projection; and the other two, azimuthal equidistant projections of the polar areas. In the second article, Professor Holmes continues his scholarly discussion of how organisms are organized. The larger and more important part of Dr. Dansereau's article on science in French Canada appears in this issue.

According to Dr. Kleinschmidt, a physician whose hobby is wheels, "Doubtless God can make a wheel, but evidently He never did." So the author speculates on how man may have conceived and developed the wheel, and he gives examples and illustrations of its evolution. Rolling down to Rio, Mr. Hambleton, an economic entomologist who has spent many years in Brazil and Peru, discusses the problems of agricultural insect pest control in these countries where the



use of insecticides has not yet been extensively developed.

After a bit of metaphysics by Professor Dadourian, the concept of the Aryan superrace is exploded by Professor Knight Dunlap, who is willing to call the Japs "Aryans."

Two delightful articles on different aspects of education bring up the rear. In the first, Dr. Kanner shows that rearing children is not so difficult after all, provided one likes children, and in the second, Dr. Cockerell, who was born in England, tells how the secondary schools of Britain have improved since he was a boy and how well they have carried on during the war.

For the first time Comments and Criticisms is restricted to a single subject—letters approving and disapproving the address by Dr. A. J. Carlson, "Science and the Supernatural."

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#### A Notable Conference on Alcoholism

A recent conference on "The Treatment and Prevention of Alcoholism" set a pattern for cooperation between the natural and the social sciences that promises much for the future. The subject lay in a field that has been involved in bitter controversies from time immemorial. Too often partisans of different opinions have been arrayed along political or religious lines, and the weapons of discussion, on both sides, have been irresponsible assertions, accusations, and invectives. Yet this recent conference was conducted in an atmosphere of mutual respect and tolerance by men with widely differing backgrounds who were seeking to be guided only by the truth.

The exceptional quality of this conference was due to standards set by the organizing body, the Research Council on Problems of Alcohol. In fact, the Association was indirectly involved. Six years ago the Association admitted the Research Council on Problems of Alcohol as an

associated society with the explicit understanding that its work would always be carried out on the high level of intellectual integrity characteristic of science. This the Research Council has done, including the conference, or "Institute," that it organized and held in New York City on last June 20. The president of the Research Council on Problems of Alcohol is Dr. Anton J. Carlson, president of the Association. Its officers are all men of very high professional standing. Its declared purpose is "to bring about, through research and education, a continuing reduction in alcoholism and the alcoholic psychoses, accidents, inefficiency, and various states of ill health associated with the excessive use of alcohol." Such objectives honestly pursued over a period of years would relieve the world of many of its woes.

Nothing can more effectively indicate the character of the conference that was held in New York than the organizations that joined with the Research Council on Problems of Alcohol in sponsoring it. They were: Academy of Medicine—Section of Neurology and Psychiatry, Allied Liquor Industries, Inc., Conference of Alcoholic Beverage Industries, Department of Alcoholic Beverage Control, State of New Jersey, Greater New York Federation of Churches, Medical Society of the County of New York, New York Neurological Society, New York Society for Clinical Psychiatry, New York State Psychiatric Institute, New York University School of Medicine, The Osborne Association, The Public Health Association of New York City, and the Salvation Army.

That the sponsors were not merely ornamental is proved by the character of the 445 persons who registered for the Institute. The registrants included 13 superintendents and representatives of psychiatric institutions, 22 representatives of public health and medical agencies, 61 doctors of medicine and 10 scientists in addition to those included in the foregoing groups, 3 nonmedical therapists, 175 representatives of social agencies, 8 representatives of courts, police departments and penal institutions, 2 representatives of liquor control boards, 10 representatives of the liquor industry, 22 business men and attorneys at law, 5 representatives of prohibition and temperance organizations, 10 educators, 19 ministers and representatives of the Salvation Army and the Seaman's Church Institute, 27 members of Alcoholics Anonymous, 4 representatives of medical journals and the press, 2 representatives of the

Army and Navy, and 11 men and 31 women not included in the foregoing.

The magnitude of the problem of acute alcoholic psychosis or from alcoholism. The money cost of these casualties for a few years would endow a university; the social costs cannot be measured. Alcoholism, however, is of particular interest here as an illustration of the innumerable ills of society that cry for remedies. The conference organized by the Research Council on Problems of Alcohol illustrates the methods that henceforth must be used in this complex world in order to solve its social problems. The emotions may provide the urge for great undertakings, but the roads to achieving them must be marked out by the exacting methods of the natural and the social sciences. Every discovery in the natural sciences sooner or later has social effects. Every social maladjustment sooner or later interferes with the advancement of the natural sciences. It will be one of the high purposes of the Association in the future to unite the natural and the social sciences more closely in the service of mankind.

#### Apologies and Thanks

When persons become members of the Association after the beginning of the calendar year they are sent back issues of their journals, each of which begins a new volume in January. It is necessary, therefore, to print enough extra copies of the journals during the early months of the year to provide for these late memberships.

The shortage of paper has been so acute this year that the printing of extra copies has been kept down to a few hundred. It was not expected that under war conditions the applications for membership would approach normal levels. However, new members and reinstatements of lapsed memberships exceeded all estimates, a total to September 5 of 2,217 instead of about 1,600, as expected. Hence, it became necessary on two occasions to appeal to members for back numbers of *The Scientific Monthly* and *Science* for new members. The response has been prompt and generous and requirements are being met. This will explain why some new members are receiving used copies. Apologies to those who received second hand copies and sincere thanks to those who donated them!

Naturally there are some misgivings about paper for next year, but the European phase of the war appears about to close. With its termi-

nation the demands on manpower for war purposes will decrease and deficiencies of all kinds will decline. One hopeful sign for publishers is that the production of paper pulp is a little above that of a year ago, but it still remains far short of normal requirements.

Since the membership year begins on October 1 statements of account are sent out on that date. Those who have paid their dues before December 20 will receive their journals without interruption, except in cases in which addresses have been changed without notifications to the office of the Permanent Secretary. Each week all changes of address are completed in the office of the Association, but the printers must also clear their records and make new addressograph plates for mailing. Consequently two weeks must be allowed for changing an address, and under the pressures that have existed during the past year this period occasionally has not been sufficient.

The problem of providing journals for members will be a serious one during the coming year, partly because of a shortage of paper and partly because a very large number of new members will probably be received as soon as scientists are able to turn their attention from the demands of war to constructive programs of peace. The Association now has the largest membership in its history and a smaller percentage in arrears than at any time for at least 15 years.

#### Lost Life Members

Since life members do not pay annual dues, there is little reason in general why they should write to the Office of the Permanent Secretary except to give notice of change of address. Unfortunately a life member sometimes fails to notify the Association that his address has been changed. Like other members, they die in due time, and sometimes their relatives fail to inform the Association of their passing. For these reasons the Association, although losing contact with life members, continues to send journals addressed to them. Now that it is very difficult to get sufficient paper to supply members with their journals, it is particularly important to establish the present addresses of lost members or to discontinue them on the mailing lists for the journals.

An alphabetical list of lost life members follows below, and the dates since which all mail addressed to them has remained unclaimed. Any information that can be furnished regarding their present addresses will be greatly appreciated.

Ralph Baggaley, April 5, 1943; B. L. M. Bates, October 1, 1942; Mrs. William Belknap, October

13, 1937; Rustom D. Dalal, June 20, 1941; Stuyvesant Fish, 1942; Karl F. O. Haack, September 26, 1942; Stansbury Hager, September 27, 1943; Albert Herbert, 1921; Miss Jennie Herbert, 1921; Mrs. James J. Higginson, February 21, 1942; Miss Mary L. Jackson, October 1, 1942; Dr. Kwong Yung Kwang, September 12, 1937; Fred I. Lackenbach, October 12, 1937; Courtenay Lemon, October 12, 1937; C. McKenzie Lewis, Jr., October 9, 1942; W. E. MacDonald, October 12, 1937; Rev. J. D. Marmor, October 1, 1925; Edward L. Miloslavich, M.D., August 1, 1942; Caroline L. Morgan, September 29, 1943; Dr. Elias H. Panganiban, August 1, 1942; John Patten, October 1, 1925; William H. Perkins, December 14, 1942; Prof. Bernard E. Read, August 1, 1942; Herman J. B. Scharnberg, October 1, 1942; Dr. Augustus P. West, August 1, 1942; Dr. Shigeo Yamanouchi, April 1, 1943.

### The Cleveland Meeting

As this issue of the BULLETIN goes to press the Cleveland meeting of the Association is well under way. Although it is not a large meeting in comparison with those which were held in the years preceding the outbreak of the war, it is a good meeting, it has many programs of high quality, the attending scientists are enthusiastic, many have expressed their gratification that the meeting is being held, and not one has been heard by the officers to express the opinion that holding it is a mistake.

The presidential address of Dr. Isaiah Bowman was delivered on Monday evening, not by Dr. Bowman himself because his attendance on the international peace conference being held in Washington was imperative. A substitute read his address entitled "Commanding Our Wealth" to an appreciative audience. It was particularly well received because it related to one of the great international problems now under consideration at the peace conference.

Other members of the Executive Committee who were unable to attend the meeting because of duties connected with the war were Drs. Roger Adams, J. W. Barker, Arthur R. Compton, E. C. Stakman, and W. E. Wrather. Although the requirements of the Army and the Navy prevented many eminent scientists from attending the meeting, the armed forces sent many officers to attend the meeting. Among them were Brigadier General James S. Simmons, Major O. R. McCoy, Brigadier General E. G. Reinartz, Major Allyn C. Swinnerton, Captain F. M. Harrison, Major Ivan C. Berlien, and Colonel John H. Baird.

### The Michigan Academy of Science

The Michigan Academy of Science, Arts and Letters was founded in 1894, and was incorporated under the laws of Michigan in 1895. Professor Jacob E. Reighard of the Department of Zoology, University of Michigan, conceived the idea of having a state academy, and was supported by colleagues at the University, Michigan Agricultural College, and other institutions of the state. There were 79 charter members, among whom were Walter B. Barrows, W. J. Beal, Charles A. Kofoid, Frank R. Lillie, F. C. Newcombe, F. G. Novy, Jacob E. Reighard, W. H. Sherzer, J. B. Steere, and H. B. Ward. W. J. Beal was the first president and F. C. Newcombe the first secretary.

The first meeting of the Academy was held in the State Capitol Building at Lansing on December 26 and 27, 1894. There was only one section, and 15 papers were read. Plans for a division into three sections were made at this time, Zoology, Botany, and Sanitary Science. The second meeting was held in the State Capitol, the third and fourth at the University at Ann Arbor, the fifth at Ypsilanti State Normal College, and the sixth at Michigan Agricultural College at East Lansing. Meetings have been held yearly at Ann Arbor since that time except in 1896 and 1914, when no meetings were held.

The sections represented have increased to 17, Anthropology, Botany, Economics, Fine Arts, Folklore, Forestry, Geography, Geology and Mineralogy, History and Political Science, Landscape Architecture, Language and Literature, Mathematics, Philosophy, Psychology, Sanitary and Medical Science, Sociology, and Zoology. A section in Agriculture, begun in 1900, ran for more than 20 years, and a section of Science Teaching, authorized in 1902 continued until 1908. In 1921 the name of the Academy was changed from "The Michigan Academy of Science" to "The Michigan Academy of Science, Arts, and Letters." Various changes have been made in the offices, but for many years the work was carried on chiefly by the president and secretary-treasurer. The officers now consist of president, vice president, secretary, treasurer, editor, and librarian. These officers, along with the past presidents who now live in the state of Michigan and the chairmen of sections, constitute a council, which meets two or three times each year and transacts much of the business of the society. Plans have been made for a Junior Academy of Science, but they must wait until peacetime for further development.

The publications of the Academy consist of the *Annual Report of the Michigan Academy of Science, Arts, and Letters*, which is prepared by the editor, and the *Papers of the Michigan Academy of Science, Arts, and Letters*, which are edited by the Academy editor and sectional assistants, in conjunction with the Editor of Scholarly Publications of the University of Michigan. Previous to 1921 the *Annual Report of the Michigan Academy of Science* contained all published articles, and financial aid for publication was received from the State. Since that time it has contained only the programs of meetings, the minutes of



the council and business meetings, reports of committees, a list of members, and in recent years the presidential address. It is sent free to all members. The *Papers*, the first volume of which appeared in 1923, consist of articles selected from those presented at the meetings, and are sold through the University of Michigan Press. Volume 29 (1943), released in June, 1944, consists of 59 individual articles, comprising 701 pages. Liberal financial aid for publication of the *Papers* is received from the University.

There are three classes of members, honorary, life, and regular. The roll now consists of 15 honorary members, 16 life members, and about 1,100 regular members, distributed among 30 states and several foreign countries. Life membership is \$25, and annual dues for regular members are \$1.

The Academy has been affiliated with the American Association for the Advancement of Science since 1920, and receives a small financial allowance from it annually, which is awarded by a special committee as one or more research grants to members.

A history of the Academy up to 1933 may be found in the *Papers*, Volume 19 (1934), pages 1-19.

The meeting in 1944 was held at Ann Arbor on March 17 and 18, with about 400 people attending the 42 sessions and the luncheons. The attendance in most sections was about up with that of normal years, but perhaps more local. Many of the programs or individual papers dealt with war and peace problems.

At the business meeting the following officers were chosen for the ensuing year: President, Alfred L. Nelson, Detroit; vice president, Harry D. Ruhl, Lansing; secretary, F. K. Sparrow, Ann Arbor; treasurer, Mischa Titiev, Ann Arbor; and librarian, W. G. Rice, Ann Arbor.—HARRY W. HANN and EUGENE S. MCCARTNEY.

### North Carolina Academy of Science

The North Carolina Academy of Science was organized March 21, 1902, with 12 charter members. Agitation for such an organization had been carried on during 1901 and when the organization meeting was held a constitution was soon made ready for adoption. An executive committee of nine members (out of the total of 12) was set up, and October 3, 1902, was set as the date for the first annual meeting for the presentation of papers. For some unknown reason the meeting was delayed until November 28, when a program of 24 papers was presented by some 18 members. Of the 12 charter members, seven are still living, three are known to be dead, and two are unaccounted for. Of the seven living, four are still members of the Academy.

It is apparent that the organizers of the Academy considered the problem of publication very important, since Article 2, Section 1, of the constitution reads: "The object of the Academy shall be to promote study and scientific research and to furnish so far as practicable a means of publication of such articles as may be deemed worthy." Article 5, Section 1, reads: "The official organ of the Academy shall be known as the

Journal of the North Carolina Academy of Science." However, the Academy journal did not appear. At a meeting held May 1, 1903, it was suggested "that the Journal of the Elisha Mitchell might be enlarged to meet the needs of the Academy publications if the Academy can bear approximately two-thirds of the necessary expense of the increase, estimated roughly at \$100." Evidently the agreement was consummated, for at the third annual meeting held in May, 1904, apologies were offered for the late appearance of the *Journal* carrying the transactions of the previous meetings. Thus began a relationship which has existed throughout the subsequent life of the Academy. Evidently the Academy had the better of the deal since only \$50 per year was contributed until 1911 when the sum was raised to \$75. The present fee is \$300 and each member receives gratis all issues of the *Journal*. This has proved to be a satisfactory arrangement to the Academy.

Although the Academy began with only 12 charter members, ten others were added at the first annual meeting. By the third meeting, the membership had grown to 50. In 1911 there were 88 members; in 1918, due probably to the war, only 83; in 1928, 247, and in 1942, 324, with some 40 members in arrears for dues as of June 1 not included.

The Academy began with the idea of having members and fellows. Patrons were next added, but there seems to be no record of patrons having been elected, possibly because a fee of \$100 was expected. While this latter classification has existed until recent times, fellows were eliminated at an early date and all persons elected have been classed as members. In recent years several new categories of members have been added. Life members are selected from those who have been active members of the Academy for 20-25 years. There are now 13 life members. They have all the privileges of the Academy without payment of dues. Another of the recent changes provides for the "affiliation of science clubs." This is a temporary membership being renewed from year to year. The fee for affiliation is the same as annual dues and the affiliate receives the *Journal*. Since some of the clubs are from high schools, provision has been made to substitute some such journal as *Nature*, *The Scientific Monthly*, or *Natural History* for the *Journal* of the Elisha Mitchell Scientific Society. The classification of "patron" was placed under new conditions recently and now any one contributing \$10 per year to the Academy may become a patron as long as the contribution is continued. Sustaining membership has also been established for institutions or commercial concerns who may attain the rank by payment of variable fees. All funds derived from patrons or sustaining members are to be distributed as research grants.

The meetings of the Academy are held annually, usually the week-end nearest May 1. As to the place of meetings, there is a more or less rotation among the larger educational institutions of the State. This has been true from the beginning. In the earlier days, all papers were presented before the Academy as a whole, consuming one afternoon and evening. Now all day

Friday is given over to general meetings, including a one-hour business meeting, and the presidential address at night. Saturday morning is devoted to sectional meetings, and often some sections have to be moved over to Friday because of the congestion of Saturday's schedule. Sectional meetings are provided for botany, biochemistry, geology, mathematics, physics, psychology, zoology, and wild life. There is also a section for high school science teachers. From an original meeting with some 24 papers the meetings have grown until the papers have reached 85 in number.

Much of the progress of the Academy is due to its interior organization. Routine business is carried on by an executive committee, consisting of the officers and three other elected members. The president and vice president are elected for a term of one year, and the former may not be reelected at any time. The secretary-treasurer is elected for a term of three years. The other members of the executive committee are elected for a period of three years, one being elected each year. Much work is also done by committees, such as the conservation, legislative and high school science committees. All committees make recommendations to the Academy where final action is taken.

In order to stimulate interest in science and aid in its development, the Academy makes a two-fold approach. First, in order to stimulate research it administers the grants made by the American Association for the Advancement of Science. Younger men in smaller institutions are favored in awarding these grants, which have been found to be exceedingly valuable. Through the generosity of persons desiring to be anonymous an award of \$50 is given for a "meritorious" paper presented to the Academy at its annual meeting. Here again younger members are favored. Second, in order to stimulate interest among high school students the Academy has sponsored science clubs, provided sets of lantern slides for their meetings, and also arranged for regional science fairs where feasible. While the Academy has made no effort to organize a junior academy, due to geographical and population factors, it does set up an award of \$20 to the winner of a projects contest held at the time and place of the meeting of the Academy. It also administers a grant of \$20 made by the North Carolina Forestry Association, to be awarded for a worthy essay in the field of forestry. The Academy through its High School Committee makes the recommendations for junior memberships in the A. A. A. S.

The North Carolina Academy has had during its existence 41 annual meetings, never having missed a year, and is now laying plans for its 42nd meeting, which will be held this spring. In spite of the privations of a war economy, the prospects are good both as to program and attendance—and the members are paying their dues in the usual manner. Our program will have some added attractions in a forum on War and Science, and other special papers on war research in addition to the usual research contributions—in fact *Academia ambulat*.—H. L. BLOMQUIST, *Secretary*.

## Membership in the Association

### *Eligibility for Membership*

Membership in the Association is open to all persons engaged in scientific work, whether in the fields of the natural or the social sciences; to all amateur scientists, whatever their special interests; and to all who desire to follow the advances of science and its effects upon civilization. Members having made substantial contributions to the advancement of science are eligible for election as fellows.

### *Dues and Publications*

Membership dues are \$5 per year, including subscriptions for the monthly A.A.A.S. BULLETIN and either the weekly journal *Science*, now in its 99th volume, or *The Scientific Monthly*, now in its 58th volume. *Science* is a journal for professional scientists; the *Monthly* is a nontechnical journal for the intelligent public. The Association also publishes technical symposia and nontechnical books on science that are available for members at prices substantially below those to the public.

### *Organization and Meetings*

The Association was founded in 1848, with an initial membership of 461. Papers in its early programs were classified as either natural philosophy or natural history. Now its work is organized under 16 sections and 189 associated societies having a total membership of over 500,000. Its annual meetings are the greatest regular gatherings of scientists in the world.

### *Nominations and Applications for Membership*

Members may submit nominations for membership at any time, and persons desiring to become members can obtain membership application forms from the Office of the Permanent Secretary, the Smithsonian Institution Building, Washington 25, D. C.

### *Changes of Address*

New addresses for the Association's record and for mailing the journals *Science* and *The Scientific Monthly*, as well as the A.A.A.S. BULLETIN, should be in the Office of the Permanent Secretary, Washington 25, D. C., at least two weeks in advance of the date when the change is to become effective.

## Officers of the Association

*President*, Anton J. Carlson; *Permanent Secretary*, F. R. Moulton; *General Secretary*, Otis W. Caldwell; *Treasurer*, W. E. Wrather; *Director of Publications*, F. L. Campbell; *Assistant Secretary*, Sam Woodley.

*Executive Committee*: Burton E. Livingston, *Chairman*; Roger Adams, Joseph W. Barker, Otis W. Caldwell, Walter B. Cannon, Anton J. Carlson, Arthur H. Compton, Kirtley F. Mather, F. R. Moulton, Elvin C. Stakman, and W. E. Wrather.



